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Requestor Document Center (is requested to provide the following document)

Date of request 9/14/95 Expected receipt of document 10/14/95

Document number HP-989 K/em-333 Date of document 3/16/96

Title and author (if document is unnumbered)

(This section to be completed by Document Center)

Date request received 9/21/95

Date submitted to ADC 12/21/95

Date submitted to HSA Coordinator 9/21/95

(This section to be completed by HSA Coordinator)

Date submitted to CICO 12/21/95 1/11/96

Date received from CICO 1/8/96 3/5/96

Date submitted to ChemRisk/Shonka and DOE 3/5/96

(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received _____

Signature _____

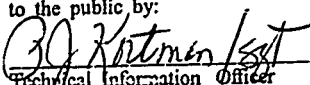
SANITIZED VERSION OF K-311-1 PURGE GAS RECOVERY REPORT DATED 3/16/56

(SANITIZED VERSION OF CRD DOCUMENT # KP-989)

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

December 21, 1995

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7314
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

This document has been approved for release
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 3/1/96
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Oak Ridge K-25 Site

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INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry
K-1001

Plant: Oak Ridge Gaseous Diffusion

Date: March 16, 1956

Copies To: Mr. R. H. Dyer
Mr. J. A. Marshall
Mr. J. A. Parsons
Mr. H. M. Preuss
Mr. M. F. Schwenn
File

Subject: K-311-1 Purge Gas Recovery

KP-989

K25RC
NOT TO BE LOANED FROM
PLANT RECORDS K-1034

PURPOSE

Special Hazards consideration is hereby requested for the proposed K-311-1 purge gas disposal system to K-1131.

EQUIPMENT

Equipment modifications will be as follows:

K-311-1

- a. The nominal 0-5000 scfd metering station orifice line will be removed, and in its place a line will be installed tying to the old 12" K-311-1 to K-402-1 'A' line. Existing ties to the 14" 'B' line and the lower surge system will be permanently buffered when not in use.
- b. Controls will be integrated with the existing graphic purge control station; measurement and control of flows and pressures will be available on both the feed to K-1131 and on any gases going to the K-311-1 stack. Automatic controls will be provided to shut off flow to K-1131, either on a high

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Dr. H. F. Henry

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March 16, 1956

space recorder signal (to prevent entry of UF₆ to the 12" line) or on low flow (to preclude reverse flow through the 12" line).

The possibility of entry of UF₆ into the 12" 'A' line is further limited by the inability of the high speed cells to operate at a bottoms concentration in excess of ~8% UF₆; operation above ~8% UF₆ results in electrical trip-out.

- c. Currently under investigation is the use of an all-purpose type line recorder tube rack, to give continuous indication of purge gas composition

2. K-27

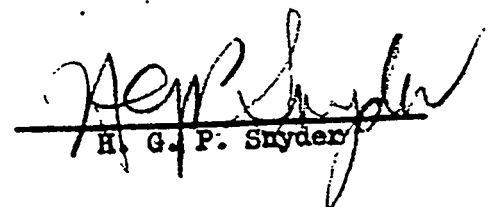
- a. The old K-311-1 to K-402-1 'A' line will be cut in K-402-9 and two Valley-Iron pumps installed as boosters in the line. An available 2" line at K-402-7 will carry the flow to K-1131, with the section of 12" line west of K-402-7 being utilized as surge capacity on the discharge of the booster pumps.
- b. All other ties to the 12" and 2" lines will be cut and capped.
- c. Gas coolers will be installed on the suction of both Valley-Iron pumps.
- d. Net flow will be recorded, as well as suction and discharge pressures and temperatures at the booster station.

OPERATION

Purge gas will enter the metering station under normal conditions at a nominal 10 psia. So long as the pressure to K-1131 is under "packing pressure" (about 10 psia), all normal purge gas flow will be to K-1131. An automatic controller will open to the K-311-1 exhausters to maintain set pressure in the line.

All gas purged through the emergency orifices (>25,000 scfd) will flow directly to the K-311-1 exhauster station.

The K-402-9 Valley-Iron pumps will be utilized to compress the purge gas to about 18 psia for use at K-1131.


H. G. P. Snyder

HGPS:HMP:lb

DISTRIBUTION

1. K-25 Site Records (RC)
2. ChemRisk/Shonka Research Associates
3. S. G. Thornton (K-25 EMD)
4. DOE Public Reading Room